Before the

Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Preserving the Open Internet	)	GN Docket No. 09-191
	)	
Broadband Industry Practices	)	WC Docket No. 07-52

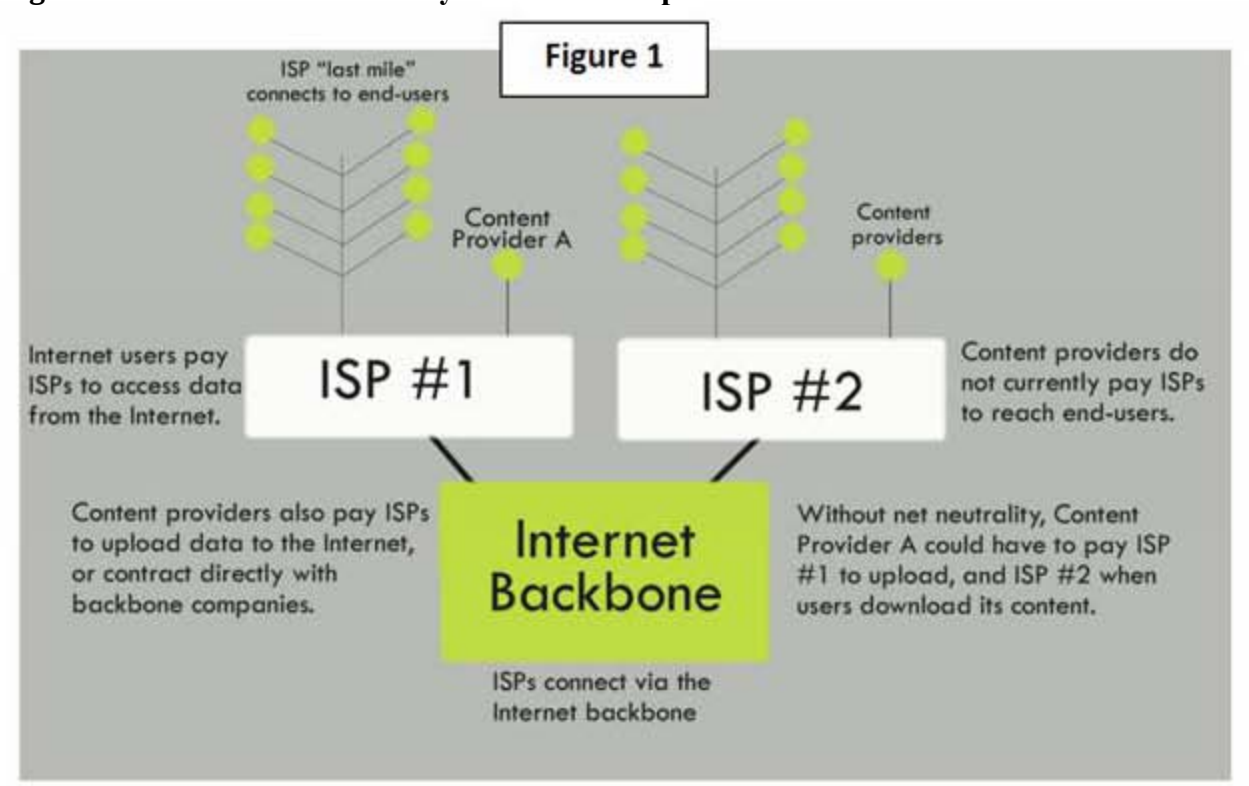
COMMENTS OF GEORGE OU,
POLICY DIRECTOR WITH DIGITAL SOCIETY

Net Neutrality economic study based on flawed analysis

Inimai M. Chettiar and J. Scott Holladay from the Institute for Policy Integrity of the New York University School of Law has published the paper "Free to Invest: The Economic Benefits of Preserving Net Neutrality[1]" (henceforth referred to as "Free to Invest" in this article for expediency). Free to Invest argues that Net Neutrality is crucial to the economic health of the Internet and that without it; broadband providers would be free to extort content providers by double charging for network access. But the analysis is based almost exclusively on a misguided and flawed understanding of how the modern Internet actually works.

Case in point, the illustration on page 17 Figure 1 (shown below) supposedly proves why it's harmful to allow ISPs to charge content providers for access to broadband consumers. It argues that a content provider would have to pay twice to get their content delivered to the end user, once to ISP #1 to upload the content and another time to ISP #2 for end users to download the content even though the end user has already paid for that portion of the connection.

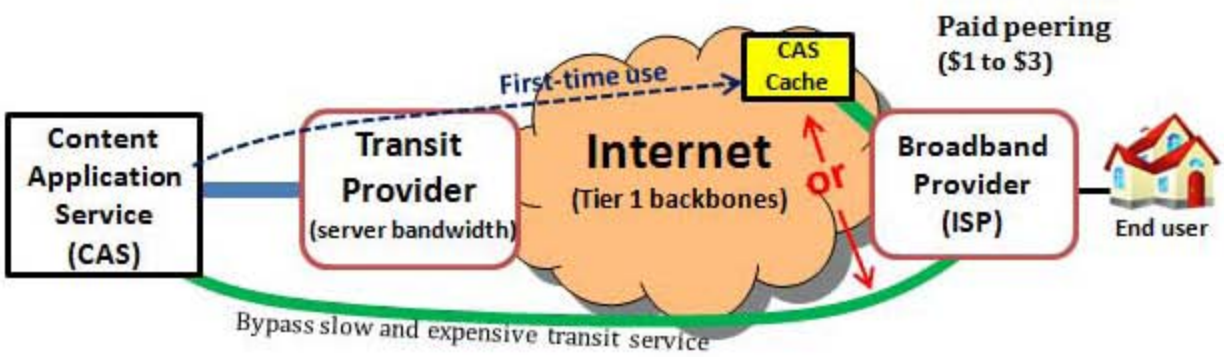
Figure 1 – Chettiar and Holladay's flawed concept of Internet extortion



Source: Free to Invest: The Economic Benefits of Preserving Net Neutrality

But the analysis in Figure 1 above is wrong because it assumes that content provider is being forced to pay double when there would be no reason to pay twice. The reality is that once Content Provider A pays to connect to ISP #2, they no longer need to pay ISP #1 to deliver content to the end users being served by ISP #2. So while Content Provider A remains connected to ISP #1, and it might even use ISP #1 as their default transit connection to reach every other part of the Internet, any traffic specifically headed for ISP #2 would bypass ISP #1 and bypass the congested and expensive Internet backbone. See Figure 2 below.

Figure 2 – Paid Peering model is cheaper and faster



This arrangement eliminates the expensive transit charges that would have been incurred by the content provider had they used ISP #1 (transit provider in Figure 2) to send traffic destined for ISP #2 customers (broadband provider in Figure 2) via the Internet backbone provider (what the industry calls Tier 1

providers). So the "Free to Invest" paper completely reversed the cost assessment in Figure 1 which means the fundamental premise of their paper was wrong.

Furthermore, this direct to ISP #2 arrangement offers far more reliability and performance because Content Provider A connects directly to ISP #2 at an Internet Exchange Point (IXP). IXP network infrastructure is very cheap and fast because it only needs short range Local Area Network (LAN) cables to connect everything is in the same building. So not only does this arrangement (called Paid Peering[2]) offer faster connectivity for Content Provider A, it's also cheaper. For example, Paid Peering costs around $1 to $3 per megabit per second (Mbps) per month while transit service over the Internet Backbone costs $2 to $9 per Mbps per month[3].

Note: IXPs act as a type of open market for server bandwidth where content providers have a multitude of providers to pick from to get the best rates. It would be unfortunate if regulators blocked content providers from accessing these open bandwidth markets because they fear that it doesn't fit some outdated notion of how the Internet works. Ironically, Net Neutrality proponents would mandate the traditional slow and expensive transit delivery model.

The theory that Chettiar and Holladay put forth in "Free to Invest" is that ISP #2 could double charge and essentially extort Content Provider A which already paid transit service to ISP #1 by threatening to block or degrade content. But if ISP #2 blocked Content Provider A's transit traffic, they would immediately run afoul of the FCC which had already stopped and fined Madison River Communications for blocking Vonage even in the absence of Title II Common Carrier and in the absence of new Net Neutrality rules. Furthermore, there's a good chance that blocking or intentionally degrading Content Provider A's traffic coming from ISP #1 might already run afoul of existing contractual agreements in the Peering agreements that are often signed between ISPs. But why would ISP #2 even risk FCC censure and fine when they can simply offer Content Provider A a better deal with faster cheaper bandwidth and gain their business legally?

Unfortunately, arguments like the ones presented in "Free to Invest" seem to have swayed the current draft of the FCC's proposed "Net Neutrality" NPRM regulations to include rules that would forbid broadband providers from charging Content, Application, or Service (CAS) providers for "enhanced or prioritized" access to broadband consumers. Paragraph 106 of the draft FCC NPRM[4] is notably vague and open ended that no one is certain what the rule covers and that threatens a number of legitimate and innovative business models on the Internet[5]. That means Net Neutrality will actually stall innovation and investment instead of saving it because it will force us to return to the old Internet model before the rapid expansion of video based services on the Internet.

It is crucial that policymakers spend far more time researching the numerous types of Internet interconnection models before they write broad and open ended rules to prohibit things that aren't fully debated and fully understood. At the very least, we need to narrow down the nondiscrimination clause in paragraph 106 of the NPRM to only prohibit the potential abuse cases but not the innovative cheaper and faster Internet interconnection models. The Freedom to Connect paper has shown that it is not an authoritative source on Internet interconnection models. Since they reversed the cost analysis, it would have been more apt if they had titled their paper "The economic perils of Net Neutrality".

[1] Inimai M. Chettiar, J. Scott Holladay, "Free to Invest: The Economic Benefits of Preserving Net Neutrality", Institute for Policy Integrity – New York University School of Law, http://policyintegrity.org/documents/Free_to_Invest.pdf

[2] George Ou, "FCC NPRM ban on Paid Peering harms new innovators", Digital Society, November 10, 2009, http://www.digitalsociety.org/2009/11/fcc-nprm-ban-on-paid-peering-harms-new-innovators/

[3] William Norton, "Paid Peering and Net Neutrality", Ask Dr. Peering, November 5, 2009, http://drpeering.net/a/Ask_DrPeering/Entries/2009/11/5_Paid_Peering_and_Net_Neutrality.html

[4] Draft of proposed FCC NPRM "Net Neutrality" regulations, Federal Communications Commission, http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-09-93A1.pdf

[5] George Ou, "Preserving the open and competitive bandwidth market", Digital Society, January 14, 2010, http://www.digitalsociety.org/2010/01/preserving-the-open-and-competitive-bandwidth-market/